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37 CFR 1.116 EXPEDITED PROCEDURE  
EXAMINING GROUP (2137)  
01P04784US

Scr. No. 09/817,323

## REMARKS

Claim 22 is amended to correct a formality error. No new issues are introduced in this amendment.

### *I. Rejection under 35 USC 112.*

Claim 22 is rejected under 35 USC 112 second paragraph as being indefinite for failing to particularly point out and distinctly claim the subject matter. Specifically, claim 22 is rejected as having insufficient antecedent basis for the term "said formed link".

Claim 22 is amended to recite "forming a URL to provide a formed URL link" to remove the informality. Consequently this ground of rejection is no longer deemed to apply and its withdrawal is respectfully requested.

### *II. Rejection under 35 U.S.C. 102(b)*

Claims 1-9, 11-15, 18, 20, 21, 23 and 24 are rejected under 35 U.S.C. 102(b) as being anticipated by U.S. Patent 5,708,780 – Levergood et al. These claims, are deemed to be patentable for the reasons given below.

Claim 1 recites a system "employed by a first application for encoding URL link data for use in detecting unauthorized URL modification" comprising "an input processor for receiving an encryption key; a URL processor for adaptively processing a URL link to a second application differently to an intra-application link to a web page provided by said first application by using said received encryption key to encrypt a URL link address portion of said URL link to said second application to produce a processed URL and by non-encryption of said intra-application link; and a communication processor for including said processed URL in data representing a web page and for communicating said web page representative data including said processed URL to a requesting application". These features are not shown (or suggested) in Levergood.

The system of claim 1 involves "adaptively processing a URL link to a second application differently to an intra-application link to a web page provided by said first application". This is done "by using said received encryption key to encrypt a URL link address portion of said URL link to said second application to produce a

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processed URL and by non-encryption of said intra-application link". These features address the security deficiencies of URL processing functions of electronic systems. "Applications are vulnerable to the corruption of URL data and the context information conveyed within the URL data. The URL data conveyed from application 200 to application 230 includes context information comprising a session identifier and optionally a user or patient identifier. This URL data is potentially vulnerable to corruption to cause URL replay or redirection of an application to a substitute address or to gain access to application functions and parameters for unauthorized purposes. In order to protect against such corruption and to ensure that the entity being accessed is the one originally targeted, portions of the URL data conveyed between applications are advantageously encrypted" (Application page 11 lines 1-9).

The claimed system addresses the security problem by adaptively generating URLs for accessing intra-application web pages differently to URLs accessing web pages accessed by a different application. See Application page 14 lines 34-36 reciting "because the link to the test results page is an intra-application link there is no requirement for this particular embedded link to be processed in the manner previously described to incorporate the session identifier and other context information".

Levergood does not show or suggest "adaptively processing a URL link to a second application differently to an intra-application link to a web page provided by said first application". Levergood also fails to show or suggest doing this "by using said received encryption key to encrypt a URL link address portion of said URL link to said second application to produce a processed URL and by non-encryption of said intra-application link". In an exemplary embodiment of the invention illustrated in the Application specification pages 11-12, application 200 advantageously, for example, encrypts "a URL link address portion" comprising a hash value identified by field identifier GSH= derived by "hashing on the addressable portion of a fully qualified URL" comprising the "URL data either lying between the "http://" and the question mark "?" or from the data lying between the "http://" and the pound/number sign "#" - whichever comes first" (Application page 10 lines 1-2 and page 11 line 27). Consequently, in the exemplary URL string shown processed in the specification page 12

www.smed.com/altoona/prd/results.exe/1?GSM=16253384937&GSH=24017  
&Pid=1772693&Frgclr=blue

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the compressed address portion is 24017 which is concatenated with a patient identifier (Application page 12 line lines 17-21) as shown:

GSH=24017&Pid=1772693

and is encrypted into the string

16sfdjwhejeyw7rh3hekw

to produce the processed URL including the encrypted URL address portion:

www.smed.com/altoona/prd/results.exe/1?GSM=16253384937:16sfdjwhejey  
w7rh3hekw&Frgclr=blue.

This is an exemplary "processed URL". The Rejection makes a fundamental error on page 3 in interpreting the Levergood reference. Contrary to the Rejection statements on page 3, Levergood in column 5 lines 61-65 and column 3 lines 34-37 relied on in the Rejection merely discloses encryption of a session identifier (SID) and an IP address. Specifically, Levergood states "the digital signature is a cryptographic hash of the remaining items in the SID and the authorized IP address which are encrypted with a secret key which is shared by the authentication and content servers"- Levergood column 5 lines 61-65, also see column 3 lines 33-37).

Further, although in Levergood a valid session identifier "typically comprises" an "accessible domain" in the "SID encrypted with a secret key", the Levergood accessible domain is NOT a URL or an address portion of a URL (Levergood column 3 lines 33-37). Levergood explicitly defines an accessible "domain" as a collection of files and NOT a URL or address portion of a URL ("A protection domain is defined by the service provider and is a collection of controlled files of common protection within one or more servers" - Levergood column 3 lines 52-55). This is further made clear in column 5 lines 54-61 stating a "preferred SID is a sixteen character ASCII string that encodes 96 bits of SID data" that contains "an 8-bit domain comprising a set of information files to which the current SID authorizes access". Such an "accessible domain" as used by Levergood is not in a URL link address portion. This is further corroborated in Levergood in column 6 lines 29-34 indicating that such a domain is in the non-address, URL data field portion of a URL (e.g. after the question mark), specifically, a "REDIRECT URL might be: "http://auth.com/authenticate?domain= [domain]& URL = http://content.com/report".

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Levergood does not show or suggest using a received "encryption key to encrypt a URL link address portion of said URL link to said second application to produce a processed URL". Neither a session identifier nor an IP address as used in Levergood are a "URL or a URL address portion". Indeed a URL and IP address are distinct and different objects with totally different functions ("the content server records the URL and the IP address" - Levergood column 5 lines 37-38). An IP address describes an electronic address of an Internet entity whereas a URL "consists of three parts: the transfer format, the host name of the machine that holds the file, and the path to the file" (Levergood column 2 lines 28-31). A session identifier identifies a user session of computer operation for example and is itself a distinct entity that may be conveyed within a field of a URL (Application page 11 line 19).

Levergood also does not show or suggest the claim 1 feature combination involving "adaptively processing a URL link to a second application differently to an intra-application link to a web page provided by said first application". Further, the purpose of the Levergood encryption is to ensure validity of session identifiers (SIDs) by using an "Internet server" to subject "the client to an authorization routine prior to issuing the SID" (Levergood column 3 lines 24-26). In contrast, the Application addresses the problem of preventing "URL replay or redirection" through its recognition that URLs are "vulnerable to corruption" (Application page 11 lines 1-9). Consequently there is no reason, problem recognition or motivation for amending the Levergood system to include the claimed arrangement. Consequently, withdrawal of the rejection of claim 1 under 35 USC 102(b) is respectfully requested.

Dependent claim 2 is considered to be patentable based on its dependence on claim 1. Claim 2 is also considered to be patentable because Levergood does not show (or suggest) use of an "encryption key...accessible by said first and second applications from a managing application". Levergood discloses that an encryption key used for encrypting an IP address (NOT a URL address portion) is accessible by a content and authorization server (Levergood column 5 lines 61-65) but fails to show or suggest an encryption key for encrypting a "URL address portion" is accessible from a "managing application" by different "first and second applications".

Dependent claim 3 is considered to be patentable based on its dependence on claim 1. Claim 3 is also considered to be patentable because Levergood does not show (or suggest) the "communication processor communicates

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said URL link address portion to a managing application for encryption". Levergood does not suggest such a separate managing application used for encryption of URL data and operating in conjunction with distinct "first and "second" applications. Levergood in column 5 lines 44-49 relied on in the Rejection merely mentions redirecting a URL to an authentication server for authenticating a session identifier. This has no bearing on communicating a "URL link address portion to a managing application for encryption".

Dependent claim 4 is considered to be patentable based on its dependence on claim 1. Claim 4 is also considered to be patentable because Levergood does not show (or suggest) the "URL processor of said first application adaptively processes said URL link to said second application differently to said link to said web page provided by said first application in response to an identified URL type". Levergood contrary to the Rejection statement on page 4 does not show any form of adaptive URL processing in response to "URL type" or even mention or suggest "URL type" in column 3 line 56 to column 4 line 24 or elsewhere.

Amended dependent claim 5 is considered to be patentable based on its dependence on claims 1 and 4. Claim 5 is also considered to be patentable because Levergood does not show (or suggest) "said URL link to said second application includes an encrypted address portion and said link to said web page provided by said first application includes a non-encrypted address portion". Levergood does not suggest such a feature combination for reasons given in connection with claim 1.

Dependent claim 6 is considered to be patentable based on its dependence on claim 1.

Dependent claim 7 is considered to be patentable based on its dependence on claim 1. Claim 7 is also considered to be patentable because Levergood does not show (or suggest) "said URL processor compresses said URL link address portion and encrypts a compressed URL link address portion". Levergood does not suggest such a feature combination for reasons given in connection with claim 1. The hash compression relied on in the Rejection of Levergood column 5 lines 61-65 is of "items in the SID and the authorized IP address" and NOT of a "URL link address portion" as previously explained in connection with claim 1 (Levergood column 5 lines 61-65, also see column 3 lines 33-37).

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Dependent claim 8 is considered to be patentable based on its dependence on claims 1 and 7. Claim 8 is also considered to be patentable because Levergood does not show (or suggest) "said URL processor compresses said URL link address portion using a hash function". Levergood does not suggest such a feature combination for reasons given in connection with claims 1 and 7.

Dependent claim 9 is considered to be patentable based on its dependence on claims 1 and 7. Claim 9 is also considered to be patentable because Levergood does not show (or suggest) "said communication processor communicates said URL link address portion to a managing application for compression". Levergood does not suggest such a feature combination for reasons given in connection with claim 1. Levergood in column 5 lines 44-49 relied on in the Rejection merely mentions redirecting a URL to an authentication server for authenticating a session identifier. This has no bearing on communicating a "URL link address portion to a managing application for encryption".

Independent claim 11 recites a "system for encoding URL link data for use in detecting unauthorized URL modification occurring during concurrent operation of a plurality of applications" comprising "a managing application for providing a common encryption key to a plurality of concurrently operating applications; and a first application including, an input processor for receiving said encryption key; a URL processor for adaptively processing a URL link to a second application differently to an intra-application link to a web page provided by said first application by using said received encryption key to encrypt a URL link address portion of said URL link to said second application to produce a processed URL and by non-encryption of said intra-application link; and a communication processor for including said processed URL in data representing a web page and for communicating said web page representative data including said processed URL to a requesting application".

Independent claim 11 is considered to be patentable for the reasons given in connection with claim 1. Claim 11 is also considered to be patentable because Levergood does not show (or suggest) a feature combination including a "managing application for providing a common encryption key to a plurality of concurrently operating applications". Levergood discloses an encryption key used for encrypting an IP address (NOT a URL address portion) is accessible by a content and authorization server (Levergood column 5 lines 61-65) but fails to show or suggest an encryption key for encrypting a "URL address portion" is accessible from a

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"managing application for providing a common encryption key to a plurality of concurrently operating applications".

Dependent claim 12 is considered to be patentable based on its dependence on claim 11. Claim 12 is also considered to be patentable because Levergood does not show (or suggest) "said communication processor communicates said URL link address portion to a managing application for compression". Levergood does not suggest such a feature combination for reasons given in connection with claims 1 and 2.

Dependent claim 13 is considered to be patentable based on its dependence on claim 11. Claim 13 is also considered to be patentable because Levergood does not show (or suggest) "said URL processor compresses said URL link address portion and encrypts a compressed URL link address portion". Levergood does not suggest such a feature combination for reasons given in connection with claims 1 and 7.

Dependent claim 14 is considered to be patentable based on its dependence on claims 11 and 13. Claim 14 is also considered to be patentable because Levergood does not show (or suggest) "said URL processor compresses said URL link address portion using a hash function". Levergood does not suggest such a feature combination for reasons given in connection with claims 1 and 8.

Dependent claim 15 is considered to be patentable based on its dependence on claims 11 and 13. Claim 15 is also considered to be patentable because Levergood does not show (or suggest) "said communication processor communicates said URL link address portion to said managing application for compression". Levergood does not suggest such a feature combination for reasons given in connection with claims 1 and 3.

Independent claim 18 recites a "system for processing URL link data for detecting unauthorized URL modification and suitable for use by a plurality of concurrently operating applications" comprising "a first application including, a URL processor for adaptively generating a URL link to a second application differently to a URL link to a web page provided by said first application, to provide a generated URL by using a received encryption key to encrypt a URL link address portion of said URL link to said second application and by non-encryption of said URL link to said web page provided by said first application; and a communication processor for

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including said generated URL in data representing a web page and for communicating said web page representative data including said generated URL to a requesting application". Amended claim 18 is considered to be patentable for the reasons given in connection with claim 1. Further, contrary to the Rejection statement on page 6, Levergood in column 6 lines 17-26, does NOT show or suggest incorporation in "data representing a web page" of a URL generated by "using a received encryption key to encrypt a URL link address portion". Levergood in column 6 lines 17-26 merely discloses search of a web page for links NOT incorporation of generated URL links in "data representing a web page" and specifically NOT incorporation in "data representing a web page" of a URL generated by "using a received encryption key to encrypt a URL link address portion".

Independent claim 20 recites a "A system supporting concurrent operation of a plurality of Internet compatible applications" comprising "a browser application including, a display generator for providing a user interface display permitting user entry of identification information and commands for a plurality of Internet compatible applications and for providing user identification information to a first application; a URL generator for adaptively generating a URL including URL fields incorporating an encrypted URL address portion and a non-encrypted session identifier; and a processor for initiating communication of said generated URL to said first application in response to validation of said user identification information, said first application having access to a key for decrypting said encrypted URL address portion". Amended claim 20 is considered to be patentable for reasons given in connection with claim 1.

Independent claims 21 and 23 are considered to be patentable for reasons given in connection with claim 1.

Independent claim 24 is considered to be patentable for reasons given in connection with claims 1 and 11.

### *III. Rejection under 35 U.S.C. 103(a)*

Claims 10, 16, 17, 19 and 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent 5,708,780 – Levergood et al in view of U.S. Patent 5,995,939 – Berman et al. These claims, are deemed to be patentable for the reasons given below.



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Dependent claim 10 is considered to be patentable based on its dependence on claim 1. Claim 10 is also considered to be patentable because Levergood (with Berman) does not show (or suggest) "said URL processor adaptively generates URL fields including encrypted patient specific information for incorporation in said URL link to said second application". Levergood (with Berman) does not suggest such a feature combination for reasons given in connection with claim 1. Specifically, in the Berman system messages are conveyed in SMTP (not HTTP protocol) format in accordance with the HL7 standard ("At the present time, e-mail messages sent over the Internet must be in standard SMTP format" - Berman column 5 lines 61-62). Berman does not even mention a URL. Contrary to the Rejection statement on page 7, there is no suggestion in Berman (with Levergood) in column 6 lines 2-15 or elsewhere of the claim 10 feature combination involving "adaptively" generating "URL fields including encrypted patient specific information for incorporation in said URL link to said second application" together with an encrypted "URL link address portion".

Further, combining the Levergood system with the Berman features as indicated by the Rejection results in a system for encrypting IP addresses and session identifiers for communication in email messages conveying patient specific information. Such a system does NOT show or suggest the claimed features. Further, the purpose of the Levergood encryption is to ensure validity of session identifiers (SIDs) by using an "Internet server" to subject "the client to an authorization routine prior to issuing the SID" (Levergood column 3 lines 24-26). The objective of Berman is to provide an e-mail based system for making and fulfilling service requests between remote sites (Berman column 2 lines 21-26). In contrast, the Application addresses the problem of preventing "URL replay or redirection" through its recognition that URLs are "vulnerable to corruption" (Application page 11 lines 1-9). Consequently there is no common reason, problem recognition or motivation for combining the Levergood and Berman systems to provide the claimed arrangement. Consequently, withdrawal of the rejection of claim 1 under 35 USC 103(a) is respectfully requested.

Independent claim 16 recites a "system for encoding URL link data for use in detecting unauthorized URL modification" comprising "a browser application for providing a user interface display permitting user entry of identification information for providing user identification information to a first application; a first application responsive to said user identification information including, a URL processor for adaptively generating URL fields including an encrypted URL address

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portion and **encrypted patient specific information** for incorporation together with a non-encrypted portion in a processed URL; and a communication processor for including said processed URL in data representing a web page and for communicating said web page representative data including said processed URL to a requesting application". Amended claim 16 is considered to be patentable for the reasons given in connection with claims 1 and 10.

Dependent claim 17 is considered to be patentable based on its dependence on claim 16. Claim 17 is also considered to be patentable because Levergood (with Berman) does not show (or suggest) "said communication processor communicates said URL address portion and said **encrypted patient specific information** to another application for encryption". Levergood (with Berman) does not contemplate or mention encrypting a "URL address portion" and "**patient specific information**" within a URL at all.

Dependent claim 19 is considered to be patentable based on its dependence on claim 18. Claim 19 is also considered to be patentable because Levergood (with Berman) does not show (or suggest) generation of "a URL field including **encrypted patient specific information** for incorporation in said generated URL link to said second application". Levergood (with Berman) does not convey encrypted data in a URL at all as explained in connection with claim 10. Consequently, withdrawal of the rejection of claims 1-24 under 35 USC 102(e) is respectfully requested.

Amended independent claim 22 is considered to be patentable for the reasons given in connection with claims 1, 10 and 16.

In view of the above amendments and remarks, Applicants submit that the Application is in condition for allowance, and favorable reconsideration is requested.

Respectfully submitted,



Alexander J. Burke

Reg. No. 40,425

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Siemens Corporation,  
Customer No. 28524  
Tel. 732 321 3023  
Fax 732 321 3030